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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,293	05/23/2006	Amir Parham	14113-00011-US	4042
23416 7590 07/29/2008 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899				
EXAMINER				
LISTVOYB, GREGORY				
ART UNIT		PAPER NUMBER		
1796				
MAIL DATE		DELIVERY MODE		
07/29/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/580,293

**Applicant(s)**

PARHAM ET AL.

**Examiner**

GREGORY LISTVOYB

**Art Unit**

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 May 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15, 17-23 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) 20-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15, 17-19, 23 and 25-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/808)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election with traverse of 1-19 and 23-28 (Group I, conjugated polymer) and species of the formula (21) of claim 28 in the reply filed on 5/09/2008 is acknowledged. The traversal is on the ground(s) that that a search and examination of the entire application would not place a serious burden on the Examiner.

However, the required guidelines for restriction have been followed by Examiner. Applicant has not established a prove that serious burden does not exist.

Regarding election of species, the fragments 2-28 of Claim 28 are independent and distinct. The analysis of their structures and differences between them are presented in the previous Office Action mailed on 1/10/2008.

The requirement is still deemed proper and is therefore made FINAL.

### ***Claim Rejections - 35 USC § 103***

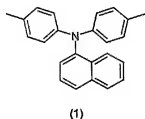
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

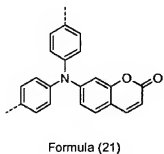
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Claims 1-15, 17-19, 23, 25-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Busing et al (WO 2004/037887, cited with equivalent US 2006058494) herein Busing in combination with and Chen et al (US 20030164499) herein Chen as evidences by Yun et al (US 5650456) herein Yun

Busing discloses a polymer, comprising units with the following formula (see page 2):



which has the same arylamine fragment as a polymer of the Application examined (see Claim 28, Formula 21):



The difference between Structures (1) and (21) is that Busing's polymer has Biphenyl fragment instead of Coumarine one of the Application. Note that both polymers

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are parts of Light Emitting Diodes (LED) (see Spec and Busing, line 0001, meeting the limitations of Claim 23, 25-26).

Chen discloses fluorescent bis-coumarines with the above Formula (21) (see Abstract). Chen uses his compounds for LED.

Chen teaches that his compound combines well known photoluminescence properties of coumarine with good thermostability, provided with arylamine (see line 0004).

As evidences by Yun, electroluminescent polymers (see Column 7, line 65) having coumarine units (see Abstract) are known.

Regarding Claims 17-19, Chen teaches that coumarine-containing compound can be used in amount from 0.1 to 5 %wt based on the weight of the emissive layer, comprising one or more polymers (see Claim 9).

Therefore, it would have been obvious to a person of ordinary skills in the art to incorporate Chen's coumarine containing units into Busing's polymer in order to combine photoluminescence properties of coumarine with good thermostability, provided with arylamine.

Regarding Claim 2, 3 and 5, Busing does not specifically disclose a location of Structure 1 in the polymer chain. However, based on synthesis conditions (they are analogous in Busing and in the Application), the above structure can be incorporated both in main and side chain of the polymer.

In reference to Claim 4, 6, 7-8, 9-11, 13-14 Busing discloses a homo- and copolymers (having at least 10% mol of structure of Formula 1, see line 0045), further fragments with the following units: 1, 4 naphthalenes, triarylaminines, pyridines , etc (see line 0036 and Claim 3).

### ***Response to Arguments***

Applicant's arguments filed on 5/09/2008 have been fully considered but they are not persuasive.

Regarding Busing Applicant argues that "even if both units are used in polymers as part of OLEDs, as stated by the Examiner, the unit of formula (1) is used as a "hole-transporting unit" whereas the unit of formula (21) of the present application is used as a "light emitting unit"".

Examiner disagrees. In Claim 21 of Busing the polymer of formula (1) is used as a part of light emitting unit.

As confirmed by Applicant, the only difference in formula (1) of Busing and claimed formula (21) as claimed is that the formula (21) has a coumarin unit, absent in Busing's structure. The rationale for modification of Busing's formula can be found in the previous Office Action.

Regarding Applicant's argument that the polymer of the claimed formula has higher photostability compare to Busing's polymer, Chen teaches that coumarin-containing compounds has excellent life-time, thermal stability and good photoluminescence (see line 0008). Therefore, good photostability of coumarin-containing structures is expected. Note that Chen's structure (see Claim 1 of Chen) is analogous to formula (21) of the Application examined.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY LISTVOYB whose telephone number is (571)272-6105. The examiner can normally be reached on 10am-7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rabon Sergent/  
Primary Examiner, Art Unit 1796

GL



